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Subject: Beam Line Configuration Control Checklist Requirements		
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Revision/Review Log

Scope

This document defines the requirements for the "Safety" and "Padlock" checklists used at the NSLS beam lines for control of the configuration of items along each line that are in place to reduce the risk of radiation exposure from operation of the line.

Purpose

This document is to define the specific items that belong on both the safety and padlock checklists for the NSLS beam lines and is to be used as a reference for writing and review of those checklists.

Background

NSLS beam line configuration control is accomplished through use of two types of checklists; the safety checklist and the padlock checklist. These checklists are used during operation of the NSLS beam lines to assure that each line is properly configured before enabling the line to take beam to the experimental end station.

The safety checklists outline the items along each beam line that must be visually confirmed to be in place for the beam line to be enabled to accept the photon beam. The safety checklists must be completed at the start of each new experimental run.

The padlock checklists outline the items that are to be locked in place whenever the line is in operation. All flanges that are isolated from the storage ring vacuum that, if opened, could allow personnel access to the synchrotron beam must be locked. Padlock checklists are developed and completed when the beam line is constructed or when a significant change in the beam line configuration is made. Opening any beam line padlock requires access to the keys which are attached to shutter control keys at the main shutter control panel. Removal of the shutter control key is under control of the NSLS Operations staff and results in disabling the safety shutter for an individual beam line. Anytime a padlock is opened, that action is logged at the beam line. An Operations Coordinator must assure that the lock is returned and that the capture points that are to be controlled by that lock are captured before the line may return to operation and the shutter key returned to the control panel.

Each item on the checklist is numbered and that item number is included on the beam line labels. The following convention is used on both the check lists and labels:

Bremsstrahlung Shields: BS#
Exclusion Zones: EZ#
Scatter Shields: SS#

The labels must be legible, durable, and securely attached to the beam line components. The NSLS Operations Group will prepare and attach these labels.

Any item that must be controlled with these checklists may be placed on either the safety or padlock checklist at the discretion of the beam line staff and the NSLS Safety Officer.

Requirements

Safety Checklists

Safety checklists are controlled documents that are included in the NSLS Quality Assurance program. They are developed and reviewed by NSLS Operations, and approved by the NSLS Safety Officer. They must be reviewed every three years.

A list of items that, if in place on the beam line, must be included on the safety checklist for that line follows.

- Bremsstrahlung shielding collimators are in place, banded, labeled, and photographed or described on the checklist. Each shield individually numbered and included as a separate item on the list.
- Exclusion zones are in place and labeled. Each zone individually numbered and included as a separate item on the list.
- Scatter shielding (sheet lead) in place and secured around; monochromators, slit assemblies, mirror tanks, or other optical components from which the synchrotron beam may scatter.
- Leaded glass windows that protect against scattered synchrotron radiation through view ports must be individually included on the checklist. The window must be labeled, "Leaded Glass."
- All bellows wrapped in lead with the lead banded or otherwise secured in place.
- A check of the padlock log.

Padlock Checklists

Padlock checklists are controlled documents that are included in the NSLS Quality Assurance program. They are developed by the beam line staff, reviewed by NSLS Operations, and approved by the NSLS Safety Officer. They must be reviewed every three years. A list of items that, if in place on the beam line, must be included on the padlock checklist for that line follows.

- All flanges that are downstream of a beam line beryllium window, that if opened could allow personnel access to the synchrotron beam or scattered radiation, must be captured with a lock or a cable that is locked and under the control of the NSLS Operations staff. There must be an entry on the checklist for each lock. Each lock must be numbered and the entry on the list must indicate the number of capture points per lock.
- White beam stops on lines that are not shielded for white beam downstream of that stop must be locked with an entry in the checklist.
- Removable opening covers or trap doors on hutches are to be locked and included on the padlock checklist unless such covers and doors are protected by the hutch interlock system.
- Vacuum valves that are not interlocked to assure their position are to be locked with an entry on the checklist if there is a possibility of programmatic loss or equipment damage due to uncontrolled operation of the valve.
- Moveable optics, stops on beam line motion, and other devices that control reconfiguration of beam lines may need to be locked with an entry on the checklist.
- Entries on the padlock checklists for items other than beam line flanges must include a description of the item that is locked in place. Examples are; leaded glass windows, removable opening covers, and trap doors.